Section 3:

Community Profile

Why Plan for Natural Hazards in City of Long Beach?

Natural hazards have the potential to impact citizens, property, the environment, and the economy of the City of Long Beach. Earthquakes, flooding, earth movement, windstorm, and tsunamis have the potential to expose the City of Long Beach residents, businesses, and visitors to the financial and emotional costs of recovering after natural disasters. Long term risks associated with realized natural hazards increases as more people move to areas affected by natural hazards.

Even in those communities that are essentially "built-out" i.e., have little or no vacant land remaining for development; population density continues to increase when low density housing is replaced with medium and high density development projects.

The inevitability of experiencing natural hazards, and the growing population and activity within the City create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future natural hazard events. Identifying the risks posed by natural hazards, and developing strategies to reduce the impact of a hazard event can assist in protecting life and property of citizens and communities. Local residents and businesses can work together with the City to create a natural hazards mitigation plan that addresses the potential impacts of hazard events.

Geography and the Environment

The City of Long Beach has an area of 52 square miles and overlooks San Pedro Bay on the south coast of Los Angeles County. Long Beach is 22 miles south of downtown Los Angeles and 10 miles southwest of Anaheim.

According to the City's Multi-Hazard Functional Plan, the elevation ranges from a high of 60 feet in the northern portion of the City to a low of sea level along the coast.

Community Profile

The area comprising the City of Long Beach was first settled as a community in 1880 (Willmore City) and the City itself was incorporated on December 3, 1897.

The City is served by the following major highways:

710 Long Beach Freeway (North/South)

405 San Diego Freeway (North/South)
605 San Gabriel River Freeway (North/South)
Route 1 Pacific Coast Highway (along coastline)
22 Garden Grove Freeway
47 Terminal Island Freeway (East/West)

The Alameda Corridor Railroad serves the city with tracks in the area that parallels the 710 Freeway along the western border of the City. Passenger transportation is provided by Metro Blue Line: Long Beach to Los Angeles; and Metro Green Line: northern tip of Redondo Beach to Norwalk.

Major Rivers

The nearest major rivers are the Los Angeles River and the San Gabriel River. These Rivers have the potential to impact the City of Long Beach. Flood control measures to cope with infrequent but intense rainfall have been taken throughout the entire Los Angeles Basin. These flood control activities are under the auspices of the Los Angeles County Flood Control District and the U.S. Army Corps of Engineers, which work in conjunction with local municipalities. The City of Long Beach, like other local governments, must take certain measures to qualify for the National Flood Insurance Program of the Federal Department of Federal Emergency Management Agency (see Hazard-Specific Section: Flooding).

Climate

The climate of Long Beach, which is to the south of the San Gabriel Mountains, is considered subtropical (LA Basin is considered to be in a semi-aris climatic zone). Major precipitation contributing to the Los Angeles River Basin is primarily in the form of orographic rainfall associated with extra-tropical cyclones during the months between December and March. Snowfall is common at elevations above 5,000 feet during major storms followed by rapid melting. Major storms consist of one to several frontal systems which can last up to four or more days. Precipitation is greatly intensified due to orographic lift processes. Steep canyons and gradients in the mountains contribute to rapid concentrations of storm runoff quantities. The average annual rainfall ranges from 13.8 inches at sea level to 28.2 inches in the San Gabriel Mountains (Source: City of Long Beach Multi-Hazard Functional Plan).

Average temperatures in the City of Long Beach range from a low of 46 degrees in the winter months to a high of 83 degrees in the summer months. However the temperatures can vary over a wide range, particularly when the Santa Ana winds blow, bringing higher temperatures and very low humidity.

Minerals and Soils

According to the City's Public Safety Element of the General Plan, the City is located on the coastal margin of the Los Angeles Basin which is underlain by up to several hundred feet of unconsolidated continental sediments and over 15,000 feet of stratified sedimentary rocks of marine origin. The marine section is composed of interbedded units of sandstone, siltstone, and shale. The central portion of Long Beach has been elevated by regional uplift and local folding and faulting.

The physiographic features within the City can be separated into six rather distinct areas:

1) The row of low hills extending from Bixby Knolls southeasterly to Seal Beach and including Signal and Reservoir Hills;

2) The broad, slightly elevated marine terrace lying south of this row of Hills;

3) The Los Angeles River floodplain, known as the Dominguez Gap, lying along the western side of Long Beach;

4) The San Gabriel River floodplain and channel, known as the Alamitos Gap, in the northeasterly portion of the City;

5) The alluvial plain lying to the north of Bixby Knolls and Signal Hill; and

6) The coastal area including the sea bluffs, beach and barrier bars across the gap areas. The latter area along the seaward portions of the gap areas have been highly modified by dredging and landfill operations associated with construction of recreational and harbor facilities. The gap areas are of particular concern because of the large landfill areas and the shallow groundwater conditions.

Mineral resources consist of major reserves of oil and gas that have played a significant role in the historical development of the City. The City of Long Beach is situated over major oil fields related to geologic structures associated with Los Angeles Basin tectonics, primarily the Newport-Inglewood Structural Zone. Oil producing zones have been found in the Wilmington, Long Beach, and Seal Beach Oil Fields. No other mineral deposits of significance are located within the City.

Soil in the City has developed naturally over the unconsolidated and consolidated parent material unless modified by human activities. Natural soils in the Long Beach area consist of various mixtures of sandy, silty and clay loams.

Other Significant Geologic Features

The City of Long Beach, like most of the Los Angeles Basin, lie over one or more known earthquake generating faults. Other potentially active faults (i.e. blind thrust faults) may extend beneath the City and could pose a substantial threat to human life and property.

The major faults that have the potential to significantly affect the City and the greater Los Angeles Basin include the:

San Andreas
Newport – Inglewood – Rose Canyon
Palos Verdes
Compton Blind Thrust
San Clemente

The Los Angeles Basin has a history of powerful and relatively frequent earthquakes, dating back to the powerful 8.0+ San Andreas earthquake of 1857 which did substantial damage to the relatively few buildings that existed at the time. Paleoseismological research indicates that large (8.0+) earthquakes occur on the San Andreas fault at intervals between 45 and 332 years with an average interval of 140 years[1]. Other lesser faults have also caused very damaging earthquakes since 1857. Notable Los Angeles Basin earthquakes include the 1933 Long Beach Earthquake, the 1971 San Fernando Earthquake, the 1987 Whittier Earthquake and the 1994 Northridge Earthquake.

In addition, many areas in the Los Angeles Basin have sandy soils that are potentially subject to liquefaction. The City of Long Beach has identified areas potentially subject to liquefaction. Those areas are discussed in Section 5: Earthquake.

The City of Long Beach has also identified areas potentially subject to earth movement (see Section 7: Earth Movement).

Population and Demographics

According to the City's General Plan 2001 Housing Element, the City has a population of 481,000 in an area of 52 square miles.

The increasing number of people living in City of Long Beach creates more community exposure, and changes how agencies prepare for and respond to natural hazards. In the 1987 publication, Fire Following Earthquake issued by the All Industry Research Advisory Council, Charles Scawthorn explains how a

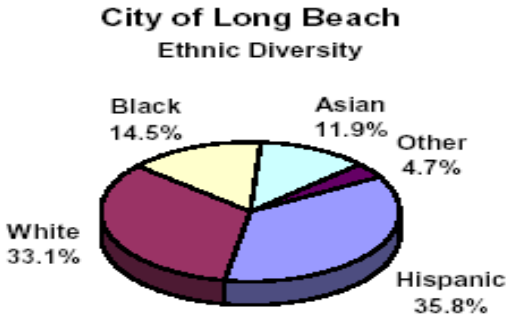
[1] Peacock, Simon M., http://aamc.geo.lsa.umich.edu/eduQuakes/EQpredLab/EQprediction.peacock.html

post-earthquake urban conflagration would develop. The conflagration would be started by fires resulting from earthquake damage, but made much worse by the loss of pressure in the fire mains, caused by either lack of electricity to power water pumps, and /or loss of water pressure resulting from broken fire mains.

Furthermore, increased density can affect risk. For example, narrower streets are more difficult for emergency service vehicles to navigate, the higher ratio of residents to emergency responders affects response times, and homes located closer together increase the chances of fires spreading.

Natural hazards do not discriminate, but the impacts in terms of vulnerability and the ability to recover vary greatly among the population. According to Peggy Stahl of the Federal Emergency Management Agency (FEMA) Preparedness, Training, and Exercise Directorate, 80% of the disaster burden falls on the public, and within that number, a disproportionate burden is placed upon special needs groups: women, children, minorities, and the poor.[2]

According the City's General Plan 2001 Housing Element, the demographic make up of the City is as follows:



The ethnic and cultural diversity suggests a need to address multi-cultural needs and services.

The percentage of residents living below poverty level in the City of Long Beach is 24.4% in 2003 according to the most recent census estimates. Out of all these residents, 37.7% are under 18 years old, and 11.0% are over 65. The overall median income in Long Beach is $36,662, compared to a national median of $43,318.

Vulnerable populations, including seniors, disabled residents, women, and children, as well as those people living in poverty, may be disproportionately impacted by natural hazards.

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[2] www.fema.gov

Examining the reach of hazard mitigation policies to special needs populations may assist in increasing access to services and programs. FEMA's Office of Equal Rights addresses this need by suggesting that agencies and organizations planning for natural disasters identify special needs populations, make recovery centers more accessible, and review practices and procedures to remedy any discrimination in relief application or assistance.

The cost of natural hazards recovery can place an unequal financial responsibility on the general population when only a small proportion may benefit from governmental funds used to rebuild private structures. Discussions about natural hazards that include local citizen groups, insurance companies, and other public and private sector organizations can help ensure that all members of the population are a part of the decision-making processes.

Land and Development

Development in southern California from the earliest days was a cycle of boom and bust. The Second World War however dramatically changed that cycle. Military personnel and defense workers came to southern California to fill the logistical needs created by the war effort. The available housing was rapidly exhausted and existing commercial centers proved inadequate for the influx of people. Immediately after the war, construction began on the freeway system, and the face of southern California was forever changed. Home developments and shopping centers sprung up everywhere and within a few decades the central basin of Los Angeles County was virtually built out. This pushed new development further and further away from the urban center.

The General Plan addresses the use and development of private land, including residential and commercial areas. This Plan is one of the City's most important tools in addressing environmental challenges including transportation and air quality; growth management; conservation of natural resources; clean water and open spaces.

The environment of most Los Angeles County cities is nearly identical with that of their immediate neighbors and the transition from one incorporated municipality to another is seamless to most people. Seamless too are the exposures to the natural hazards that affect all of southern California.

Housing and Community Development
(Source: City of Long Beach General Plan, 2000 Census, and 2004 Technical Background Report for the City's General Plan Update)

Development Type (Major Categories)	
Residential	47.4%

Commercial	8.6%
Institutional	6.6%
Industrial	6.2%
Open Space & Parks	7.5%
Housing Type	
Single-Family	46%
Multi-Residential (20+ units)	15.5%
Mobilehomes	1.3%
Housing Statistics	
Total Available Housing Units	171,632
Owner-Occupied Housing	95%
Average Household Size	2.77
Average Home Value	$375,000

Employment and Industry
(Source: 2000 Census)

Principal Employment Activities	
Management (professional and related occupations)	34.3%
Sales and Office Occupations	27.2%
Service Occupations	15.8%
Production, Transportation, and Material Moving	14.8%
Construction	7.7%
Major Industries	
Education, Health & Social Services	21.1%
Manufacturing	14.4%
Professional	10.7%

Retail Trade	10.3%
Finance, Insurance, Real Estate	9.5%

The City of Long Beach municipal government employs approximately 5,942 staff members. The largest public employer is Long Beach Unified School District with 11,096 employees. The largest private employer in the City is Boeing which manufactures commercial and military aircraft, employing approximately 10,500.

The Port of Long Beach opened in 1911 and has been developed and managed by the City of Long Beach Harbor Department with their staff of approximately 350 employees. The Board of Harbor Commissioners acts as a landlord and leases or assigns the facilities to private firms who operate the port facilities. The net income from this activity is invested in port development. These development plans for the next decade will require a $2 billion investment.

Currently, the Port provides 30,000 jobs, or one in eight jobs in Long Beach. It offers 316,000 jobs, or one in twenty-two jobs available in the five county southern California regions. Nationally, 1.4 million jobs are related to the Long Beach-generated trade. Also, the City of Long Beach is home to the second busiest container port in the Western Hemisphere. The Port processes over 65 million metric tons of cargo annually worth nearly $95.9 billion. This computation reflects the handling of more than 4.6 million containers (TEU's) which on average is equivalent of 12,000, 20-ft container (TEU) each day. Map 3-1 illustrates the location of the major employers in the City of Long Beach.

Mitigation activities are needed at the business level to ensure the safety and welfare of workers and limit damage to industrial infrastructure. Employees are highly mobile, commuting from surrounding areas to industrial and business centers. This creates a greater dependency on roads, communications, accessibility and emergency plans to reunite people with their families. Before a natural hazard event, large and small businesses can develop strategies to prepare for natural hazards, respond efficiently, and prevent loss of life and property.

Transportation and Commuting Patterns

Private automobiles are the dominant means of transportation in Long Beach. However, the City of Long Beach meets its public transportation needs through a mixture of a regional transit system (MTA), and various city contracted bus systems. MTA provides both bus and light rail service to the City of Long Beach and to the Los Angeles County metropolitan area. The Metro Blue Line runs from Long Beach to Los Angeles, while the Metro Green Line runs from the northern portion of Redondo Beach to Norwalk. In addition to this service, the City promotes alternative transportation activities.

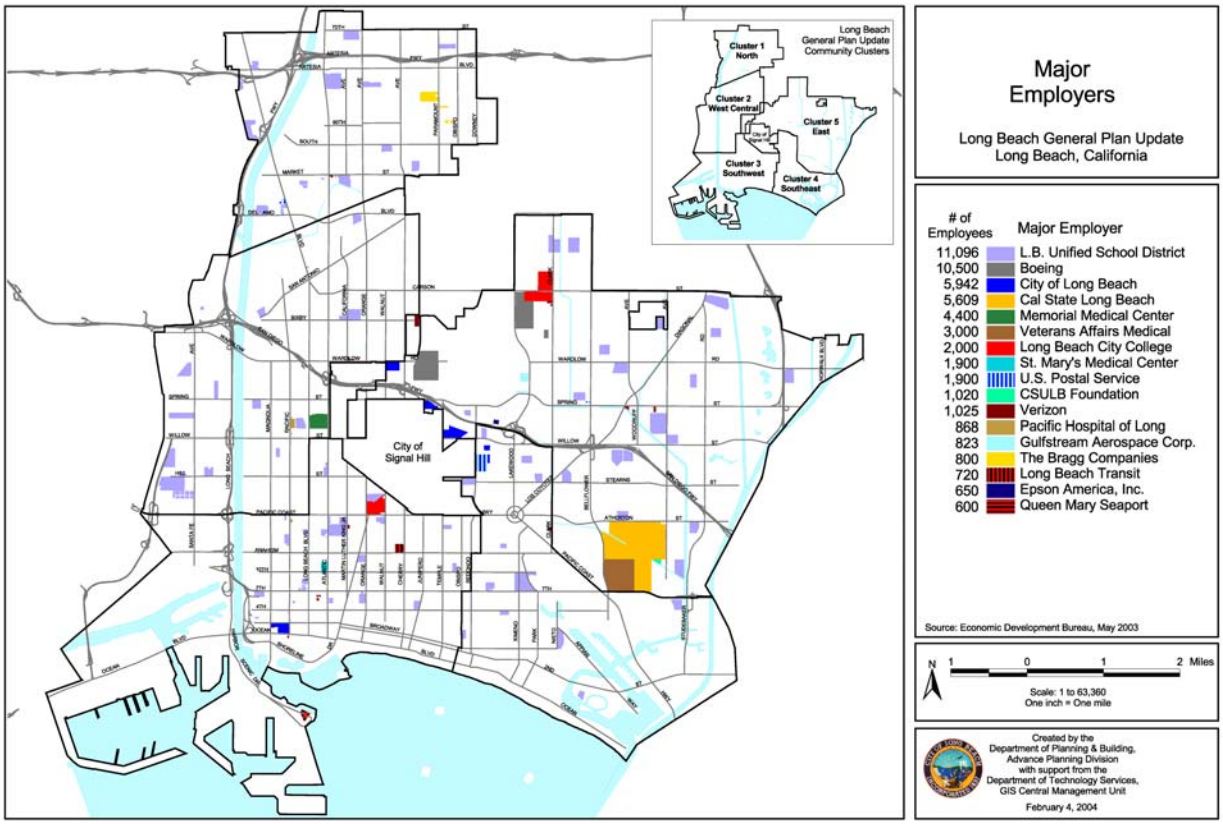
According to the 2001 Housing Element, the City has a population of 481,000 and with a daytime population around 26,729 individuals or 20% +. Within one mile of downtown Long Beach, the population is measured at 165,113. At five miles from downtown Long Beach, the population is measured greater at 363, 937. The mean travel time to work for the residents of the City of Long Beach is 28.7 minutes (2000 Census).

As stated in the City's General Plan, the City of Long Beach is served by the Interstate 5, Freeways 105, 110, 405, 605, and 710 connecting the City to adjoining parts of Los Angeles County. The City's 815 mile road system includes 259 miles of arterial highways, 556 miles of local roads, and 165 bridges.

As daily transit rises, there is an increased risk that a natural hazard event will disrupt the travel plans of residents across the region, as well as local, regional and national commercial traffic.

Localized flooding can render roads unusable. A severe winter storm has the potential to disrupt the daily driving routine of hundreds of thousands of people. Natural hazards can disrupt automobile traffic and shut down local and regional transit systems.

Map 3-1: Major Employers in the City of Long Beach
(Source: City of Long Beach Department of Planning and Building- Advanced Planning)



Municipal Services

The City provides a full range of municipal services, including police and fire, public health and environmental services, library, parks, recreation and related social services, engineering and public works, sanitation, general administration, planning and community development, public improvements, and gas, water, airport and towing services. The City also operates and maintains a world-class international deep-water harbor, a nationally recognized convention center, several beaches and marinas. Long Beach is one of only three cities in California with its own Health Department and Energy Department and the only city in California with its own Oil Department, which manages close to 2,000 oil wells.

The City has 6.5 miles of beaches, 468 acres of navigable waterways, and two City- owned and operated marinas. The City of Long Beach hosts an abundance of cultural and recreational opportunities including the Convention Center, Cruise ship terminals, the Queen Mary which attracts 1.5 million visitors annually, and lastly, the Long Beach Aquarium, drawing over five million visitors a year.

Specific tourism events include:

- Toyota Grand Prix of Long Beach is held annually in April to an estimated audience of 225,000 racing enthusiasts.
- Gay Pride Parade is a 3-day event held annually in May with crowds as high as 100,000.
- Long Beach International City Marathon is held annually and attracts 10,000 participants.
- Jazz Festival is held annually in September with an audience of 6000-8000 jazz fans.
- The Sea Festival, a citywide-city sponsored annual event with 20,000+ attendees.
- Belmont Shores Christmas Parade, held in December, with an audience of 10,000 participants/viewers.
- Belmont Shores Car Show, an auto showcase that attracts 10,000 automobile enthusiasts.